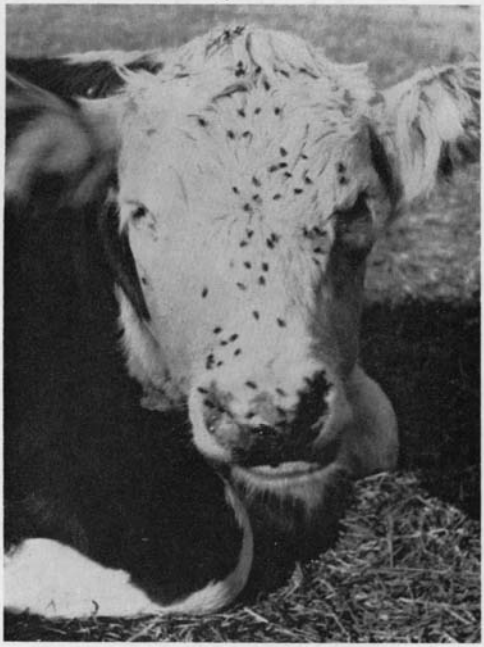
INSECT PESTS OF CATTLE



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This circular was prepared by STEVE MOORE III, Associate Professor of Agricultural Entomology and Associate Entomologist, State Natural History Survey, and H. B. PETTY, Professor of Agricultural Entomology and Entomologist, State Natural History Survey.

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INSECT PESTS OF CATTLE

Their Identification, Habits, and Injury

FLIES, LICE, AND MITES are the most important external parasites of cattle in Illinois. Each year in this state alone they are responsible for losses in the millions of dollars. In cattle they cause irritation, energy loss, blood loss, and lowered vitality, all of which can result in reduced beef and milk production. On occasion, infestations of insects like horse flies and lice have become so serious on individual animals that death has resulted. Several of these pests can transmit diseases like anaplasmosis, pink-eye, and others from animal to animal.

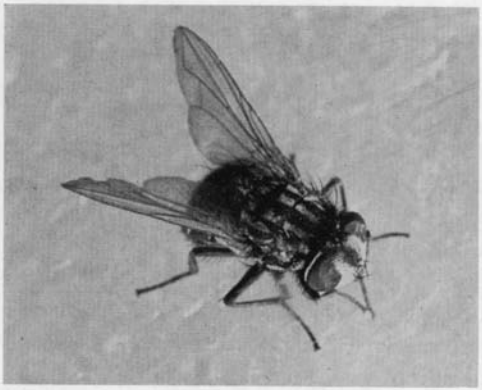
These insects are not a necessary part of an animal, as some people still believe, even though they are often present. Indeed, there is no reason for a livestock producer to share his profits with these pests, since they can be readily controlled and in many cases eradicated.

This circular will help the producer identify the major insect pests of cattle, and will discuss their habits and the injury that they do to cattle. Since insecticides as control measures are constantly being changed and improved upon, the livestock producer will want to consult his farm adviser or the latest yearly revision of Illinois Circular 898, "Insect Control for Livestock and Livestock Barns," which contains the most up-to-date information on insecticide control.

FACE FLY

Identification — The adult face fly is slightly larger than the house fly, which it resembles. The two white bands between the eyes of the female face fly are much wider than those of the female house fly. Male face flies feed on nectar from plants and are not commonly found on animals. One of the best ways to distinguish the face fly from other flies is by observing its feeding habits. Adult female face flies cluster around the eyes and muzzles of cattle, dabbing at secretions. In prolonged hot, dry weather, house flies may act in a somewhat similar manner but are less irritating to animals.

Life Cycle and Habits — Face flies overwinter as adults in partitions, cracks, and crevices, and in secluded areas in buildings. It seems likely that they also overwinter in wooded areas, probably finding shelter in tree holes, under loose bark, and other protected areas. Adults that are spending the winter in homes frequently move into the partitions of the living areas where they make buzzing sounds which



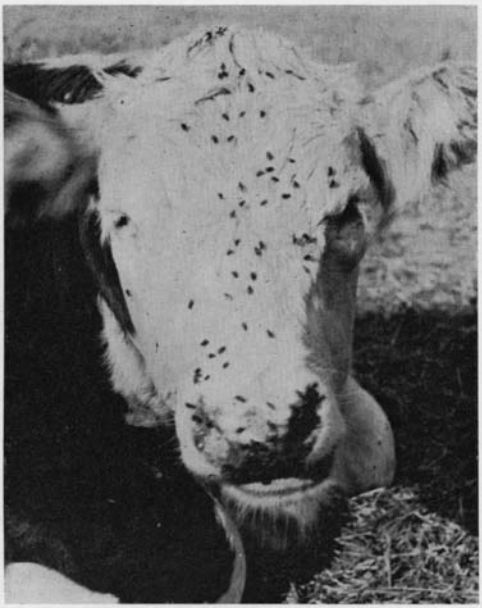
A female face fly. The irritation caused by face flies when they are left uncontrolled can result in serious losses to the producer.

resemble a swarm of bees. This usually happens on warm, sunny days in winter.

The adults make their first appearance on livestock sometime in April. After mating takes place the females begin laying their eggs in fresh cow manure. Development at this time of year is slow, and several weeks are required to produce a new generation. Therefore, in mid to late May there is often a lapse in fly numbers since most of the overwintering adults die before the new generation of adults appear. In hot weather, hatching occurs within a day, and the yellowish maggots mature (in the manure) in 3 or 4 days. As they mature, the maggots crawl to the soil adjacent to or underneath the manure to pupate, that is, change into the resting stage. The fly requires from 8 to 12 days to pass from the egg to the adult stage during the summer. Generation follows generation in this manner.

Damage — Face flies irritate cattle and cause eye problems. Just how injurious they really are is yet to be determined. Infested cattle bunch up, flap their ears, shake and rub their heads. Energy expended fighting flies and interference with grazing result in definite production losses. During the first three summers (1959-1961) of their arrival in Illinois, face flies caused production losses in pasture cattle of at least 10 to 20 percent when left uncontrolled. Counts on pastured cattle ranged from 25 to 50 per animal in the northern two-thirds of the state during this three-year period. These losses did not take into account the eye disorders, especially severe in calves, resulting from face fly attack.

Control — Face flies are a problem on cattle in pasture in the northern two-thirds of Illinois, but not on cattle in dry lot. Sanitation

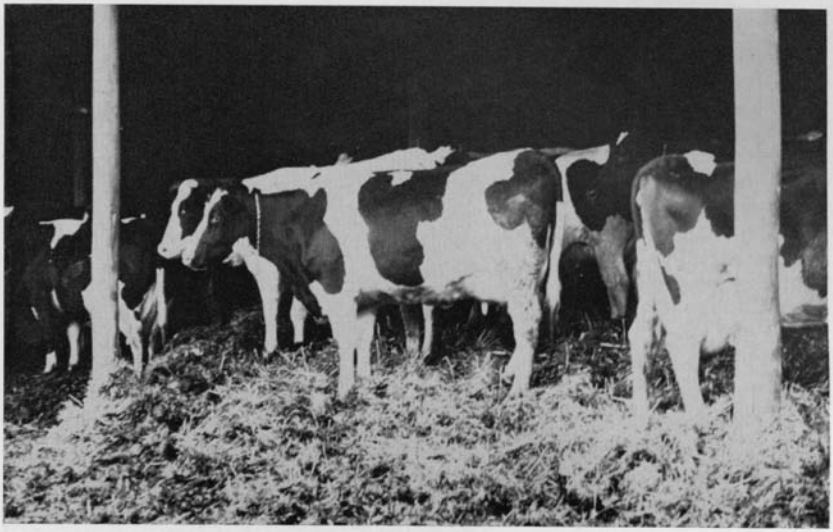


A cluster of face flies on a Hereford steer. In hot dry weather face flies cluster more tightly around the eyes and muzzles of cattle.

as a means of control is impractical because the flies breed only in freshly dropped, undisturbed manure. To determine the extent of fly infestations, observe cattle between 10 a.m. and 4 p.m. on sunny days. The highest count per animal will be found during this period. Face flies are seldom abundant and often entirely absent on animals during rains, cool temperatures (below 55° F.), or strong winds. Cattle usually begin showing annoyance at populations of 5 to 10 flies per animal. However, it is wise to begin chemical treatments as soon as the flies are observed. For insecticide recommendations see your local farm adviser or write for University of Illinois Circular 898.

STABLE FLY

Identification — Stable flies are bloodsuckers and usually attack the legs and bellies of cattle. They resemble house flies in size and shape, and are often mistaken for them. However, the stable fly's beak protrudes well beyond its head like a needle, while the parts of the house fly's mouth are soft and broad at the tip, elbowed in the middle, and projected downward. The stable fly rests with its body at an oblique angle to the surface, head up and abdomen down, while a house fly stands with its body parallel to the surface. Stable flies usually point in an upward direction on the animal when feeding.



A good breeding site for stable flies. Rotting straw and hay are preferred to manure as breeding material for stable flies.

Life Cycle and Habits — Stable flies overwinter in Illinois as larvae or pupae. They breed in wet straw, strawy manure, piles of grass clippings, and other decaying vegetable matter. The eggs hatch in 1 to 3 days, and the maggots feed for 11 to 30 days before reaching maturity. They cannot live in the absence of moisture or when exposed to sunlight. They pupate when full grown, and within 6 to 20 days emerge as adults that may live for several weeks. Under optimum conditions, the transition from egg to adult takes about three weeks.

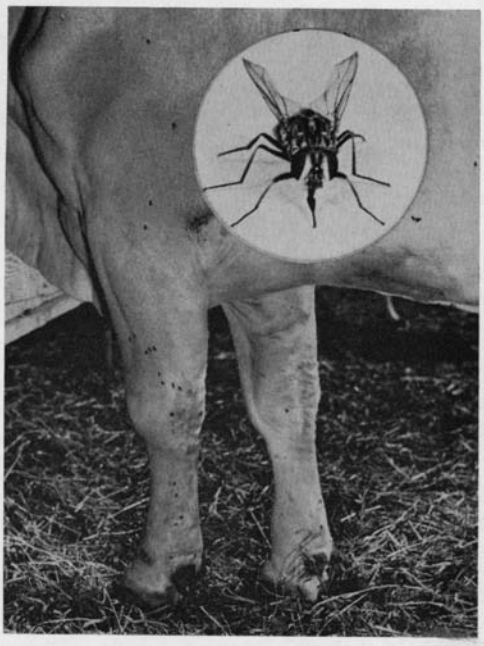
Stable flies spend 10 to 30 minutes a day feeding, and during the remainder of the day rest on nearby objects like barns, fences, and trees to digest their blood meal. Usually they feed only once each day, but in warm weather they may feed twice a day. Therefore, for every stable fly present on an animal at a given moment, there are between 50 and 100 more that will feed during the course of that day. Dry lot conditions are usually more likely to result in a heavy stable-fly buildup than pasture situations. Stable flies will not usually attack animals in a barn if the interior is rather dark.

Damage — Of all insects attacking dairy cattle in Illinois, stable flies are probably the greatest deterrent to milk production. An average of one stable fly per cow per day decreases milk production an average of 0.7 percent. Since the average stable fly population in Illinois ranges

between 15 and 25 per animal, average monthly milk loss during the four-month stable-fly season is between 11 and 18 percent when cows have no protection during grazing hours. Records show that severe attacks have decreased production as much as 50 percent. Furthermore, production does not return to normal for 60 to 90 days after the fly season ends. Unprotected cattle go out of production an average of 6 weeks sooner than animals that are protected.

Beef cattle do not make normal gains on pasture when attacked by stable flies. Under severe attack the animals may become so thin that they cannot be sold profitably. This loss in gain can be made up by heavy dry-lot feeding in the late fall, but of course regaining this loss requires extra feed.

Control — Stable flies attack cattle in both pasture and dry lot, but the problem is greatest on cattle in dry lot. The failure of insecticides to control stable flies has been traced to bad sanitary conditions; wet hay and straw under feed bunks, straw in calf pens, rotting straw stacks, and even piles of grass clippings in yards may produce thousands of stable flies weekly. Since stable flies breed in rotting straw, hay, and strawy manure, scattering these materials to dry will greatly reduce fly numbers.



Stable flies prefer to take their blood meal on the legs and belly of an animal. Their needle-like beak causes animals to stamp their feet and switch their tail.

Left to right: horn fly, stable fly and house fly. The smaller horn fly is the most numerous fly attacking pastured cattle. The larger stable fly with its needle-like beak attacks cattle both on pasture and dry lot. The house fly, annoying to humans, causes little if any production losses in cattle.

Frequent spraying is needed to protect cattle from stable flies. Pay particular attention to the animals' legs and undersides when spraying. It is wise to begin chemical treatments early in the season before fly populations build up. Start them in late May in southern Illinois, and by June 15 in northern Illinois. For insecticide recommendations, see your local farm adviser or write for University of Illinois Circular 898.

HORN FLY

Identification — Horn flies, which are blood takers, resemble common house flies but are about half the size. They cluster on the backs and shoulders of cattle by the hundreds. They usually point in a downward direction on the animal when at rest. At the least disturbance, they fly up in a swarm and then immediately settle down again on the back of the animal. During cool periods they may rest around the base of the horns or cluster on the brisket. On hot afternoons they congregate on the undersurfaces of the cattle along the mid-line.

Life Cycle and Habits — Horn flies spend the winter as larvae (maggots) or pupae, usually beneath cattle droppings. The adult horn flies become apparent in May and June. They lay their eggs in freshly dropped manure. During warm spring days the maggots hatch from these eggs in 1 to 2 days and become full grown in 5 days. When mature, the maggots pupate in the manure or in the soil, emerging as flies in about 7 days. Since the life cycle only takes about 2 weeks, there are many generations each year. The adult flies spend their entire life on the animal, but usually feed at least twice each day. Most of the flies leave as the cows enter the barn, especially if the light inside is rather

Horn fly numbers may be counted in the thousands on occasional animals. On hot days they will often leave the back and sides to cluster along the mid-line.

dim. But when the cattle are again turned out to graze, the flies, which have been resting outside the barn, rejoin them.

Damage — A few horn flies per animal have little effect on either milk production or beef gains. However, when present on each animal by the hundreds, sometimes thousands, they do interfere with maximum production. Milk production may be reduced as much as 20 percent, and beef gains as much as ½ pound a day. Both beef and milk production will return to normal after the fly season is over, but extra feed is required to regain production losses.

Control — Horn flies are primarily a problem on pastured cattle; cattle on dry lot are not bothered by them. Sanitation as a means of control is impractical because of the flies' breeding habits.

It is wise to begin chemical treatments early before fly populations build up. Start treatments in late May in southern Illinois and by June 15 in northern Illinois. For insecticide recommendations see your local farm adviser or write for University of Illinois Circular 898.

HORSE FLIES AND DEER FLIES

Identification — Horse flies and deer flies are much larger than house flies. Deer flies have dark brown markings on their wings and are somewhat smaller than horse flies, which have a wide range of sizes

A group of horse flies, the largest of the blood-sucking flies. It is estimated that each horse fly takes 1 cc of blood per feeding and that an equal amount is lost from the wound after feeding.

and colorations. Some horse flies have distinctive markings, such as a bright green head or a yellowish or reddish-brown body, while some are large and black or brown.

Life Cycle and Habits — In the immature stages, both horse flies and deer flies are semi-aquatic. The larvae take from 9 to 11 months or longer to mature, and during this time they live and overwinter in mud or wet soils near lakes or streams or in damp woods or marshy areas. The larvae pupate in the spring, emerging as adults in 1 to 3 weeks. The female lays eggs in masses of 100 to 800 which hatch in 5 to 7 days. The adults normally live 3 or 4 weeks, and ordinarily there is only one generation a year.

The larvae of many species are predacious; others, particularly deer flies, feed on decaying material. The adult females of most species are blood feeders, but the males feed on plant juices, nectar, and other nutritious liquids. The females remain on an animal only long enough to obtain blood, but they feed many times a day on many animals.

Horse flies are a problem mainly in the southern third of Illinois, but deer flies occur throughout the state wherever conditions are satis-

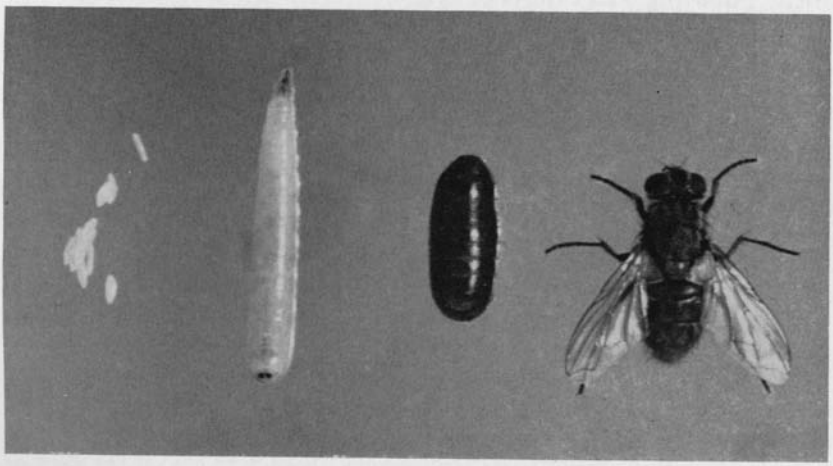
factory for survival of the larvae. Normally these insects bother animals for only about 6 weeks during the summer; but when several species are present in numbers they may be active throughout the summer.

Damage — Severe outbreaks of these flies can nearly stop milk and beef production. Moderate infestations may decrease milk production 20 to 40 percent and retard beef gains on pasture ¼ to ½ pound a day. On the average a horse fly will take about 1 cc of blood at each feeding, and the wound left will release about an equal amount.

Control — Avoid pasturing cattle in or near wooded or swampy areas when these flies are numerous. In cases of heavy infestations, provide a shed or barn for the cattle. This will allow them some relief from attack. Draining or filling wet or swampy areas will help reduce fly breeding. For insecticide recommendations, see your local farm adviser, or write for University of Illinois Circular 898.

HOUSE FLY

Life Cycle and Habits — House flies lay their eggs in moist, decaying organic material. Very soon tiny maggots hatch and feed mainly on the bacteria and yeasts in the fermenting material. They become full grown in 5 to 14 days and then crawl to a drier area. There they change into the pupal stage, which resembles a grain of wheat in shape but is dark reddish-brown. After several days, a fly emerges from the pupal



The four stages of a house fly. Left to right: egg cluster, maggot, pupa and adult.

case through a cap. Under favorable conditions flies will complete this cycle in 12 to 20 days. In northern areas house flies spend the winter as larvae or pupae in their breeding grounds. In warm buildings they continue to develop slowly throughout the winter. There are from 10 to 20 generations each year in Illinois.

Damage — House flies are primarily an annoyance, but they also transmit certain diseases among man and animals. In Illinois they are known to transmit typhoid fever and dysentery among humans, and internal worms among certain domestic animals.

Control — Sanitation is the basic step to successful control of house flies. Insecticides will not cover the sins of poor sanitation. Moist, decaying, organic materials, such as rotting straw, manure, and garbage, attract house flies and provide ideal conditions for egg laying and maggot survival. Obviously, proper disposal of such materials will reduce fly populations. Manure and other decaying material that is spread out to dry is unfavorable to house-fly development.

Clean such fly breeding areas as calf pens, bull pens, feeding platforms, and garbage pails twice a week. Make sanitation a continual process throughout the spring and summer. Use chemicals only after sanitation problems have been solved.

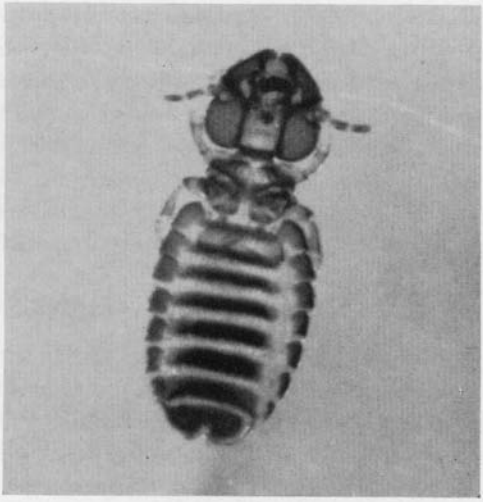
Use screens to keep flies out of buildings. Electric grids on the doors of houses and barns may be some benefit. As a general rule, traps are not of much value in combating house flies.

Materials are available for controlling maggots in their breeding areas. Applying borax dusts or granules to the soil around the garbage pails will prevent maggots from maturing. However, treating manure frequently with borax may increase the boron content of the soil on which the manure is spread, and excessive amounts of boron are toxic to plant growth. Another material, thiourea, is an effective larvicide that is safe to use on manure for maggot control. It decomposes into a sulfate and nitrate material that will not harm plants.

It is wise to begin chemical treatments early before fly populations build up. Start treatments in late May in southern Illinois and by June 15 in northern Illinois. For insecticide recommendations, see your local farm adviser, or write for University of Illinois Circular 898.

LICE

Identification — The cattle-biting louse is flat and reddish-brown, has biting mouth parts, and moves about actively on the skin of cattle. There are three other kinds of lice but these are of the sucking type and are gray to deep blue and sluggish. Lice are transmitted from



The biting louse of cattle is about 1/10 inch long. Biting lice and sucking lice are a problem in the colder months.

animal to animal by contact. The lice that infest cattle will not survive long on other livestock. Likewise, the lice that are common to other kinds of livestock will not establish themselves on cattle.

Louse eggs, or "nits" as they are sometimes called, are tiny and may be white, yellow, or black. They are found attached to hairs. The young resemble the adults except that they are smaller.

Life Cycle and Habits — Lice remain on the animal at all times. If they should drop off, they can survive for only a few hours. Populations build up in the colder months (December, January, February) and are low during the warmer months (June, July, August). The high temperatures and strong sunlight cause this reduction. Lice migrate to the undersides of the animal in the spring and remain there throughout the summer. Sometimes entire populations are killed during this period, and frequently only a few lice survive the summer, on only a few of the animals in a herd. In general, lice require from 25 to 30 days to complete their life cycle. The little red louse lays fertile eggs without mating, while sucking lice reproduce normally.

Damage — Louse infestations will lower milk production and retard weight gains in both dairy and beef cattle. Lousy animals rub, lick, and bite at infested areas. The result is loss of hair and often raw, red, and even bloody patches on the skin. Lice can frequently be found clinging to the hair of cattle, especially around the shoulders and tail crowns.

Control — A herd having a history of louse infestations can be treated in the late fall (November) before adverse weather prevails.

However, healthy animals can be sprayed in the winter without fear of injury from spraying. Plan on at least 2 gallons of finished spray per animal for an 800 pound or heavier animal. Apply the spray thoroughly, covering the animal completely. Add 1 to 2 pounds of a washday detergent to every 100 gallons of spray mix to get better wetting and penetration.

For insecticide recommendations, see your local farm adviser or write for University of Illinois Circular 898.

MANGE

Mange is caused by oval, flattened microscopic mites which live on the skin or burrow into it. The most common cattle mite in Illinois is probably the chorioptic mite which lives on the skin surface, feeding on skin and scales. Psoroptic mites also are non-burrowing surface feeders. The scarcoptic and demodectic mites burrow beneath the skin or into hair follicles and spend most of their time in this area.

Symptoms — Cattle mange first appears as small raised areas about the size of a pin head on the surface of the skin. These raised areas or pustules increase in size but they can often be felt under the hair before they can be seen. The area between the hind legs and just above is often the first area in which mange lesions occur. The hair falls from these infested areas, and if the animal is not confined in a stanchion and can rub, scratch or lick these lesions, they may become bloody.

Life Cycle and Habits — Cattle mange is seasonal in occurrence. A few mites survive the summer on cattle and sometime during October or November they begin to increase in numbers. Infestations progress during the winter months and in the spring usually disappear. Mange has been mistaken for ringworm, louse infestation, and other skin conditions.

Damage — Cattle mange is not generally a serious problem in Illinois, although on occasion individual animals or herds will develop a severe infestation. Infestations within a herd are always spotty with certain animals heavily infested while others are practically untroubled. This inherent resistance of certain animals to external parasites has not been explained.

Cattle infested with mange become restless, do not feed regularly, and skin function is probably seriously inhibited. Heavily infested animals become emaciated and may die. Intense itching and rubbing is common. Beef and milk production are lowered, sometimes drastically.

Because mange is a problem in the winter when cattle may already be under stress, control is all the more important.

Control — Preventive treatments can be made in the late fall before the problem becomes acute. If spraying becomes necessary in the colder winter weather, there is little or no hazard to the animals. Mange treatments will control lice as well.

For insecticide recommendations see your local farm adviser, or write for University of Illinois Circular 898.

GRUBS

Cattle grubs, a serious pest in some areas of the country, are of minor importance in Illinois. Grub infestations will average less than 5 grubs per animal on native cattle. Cattle under two years of age have more grubs than older cattle, which is probably due to a natural resistance in the older cattle.

Life Cycle and Habits — Two species of cattle grubs occur in Illinois, but their life cycles and the injuries they cause are similar. The adults are flies about the size of a honey bee which appear from April through August. They attach their eggs to the hairs of the legs, and the grubs which hatch from the larvae crawl down the hairs and burrow into the skin. Most of the life cycle is spent inside of the animal. From summer until the following winter or spring the grub burrows through connective tissues, missing vital organs in the animal.

Cattle grubs form cysts in the backs of cattle from December through March. Animal on the right was treated with a systemic insecticide in the early fall.

Grubs appear in the backs as bumps about ½ inch in diameter. This happens in December on shipped-in Western cattle, and in January, February, and March on native cattle. Shortly after the bumps appear, the grub cuts a hole in the top of each bump for breathing purposes. About a month later, the grub leaves the animal and pupates in the ground. There is only one generation a year.

Damage — These flies and their grubs cause several types of injury to cattle. If cattle are marketed while they have grubs in their backs some of the meat must be cut from that part of the carcass. Cattle hides with five or more grub holes are discounted. The principal injury caused by this pest however, probably results because cattle have an instinctive fear of the adult flies and are often seen running headlong with their tails up across a pasture during the fly season. They may be chased about to such an extent that they run off weight, and milk production goes down.

Control — In general, the cattle grub infestation in native Illinois cattle is not sufficiently great to justify control measures. Cattle shipped from Western states in the late summer and fall may have grub infestations of economic importance, but there is no way of knowing in advance of their emergence.

For insecticide recommendations, see your local farm adviser, or write for University of Illinois Circular 898.

OTHER INSECT PESTS

There are other insects that have been troublesome on cattle, although generally they are of less significance than the above.

Mosquitoes occasionally become so numerous that cattle will stop grazing and bunch up in or near the barnyard. Mosquitoes breed in standing water, and populations are greater near low wet areas, ponds, or slow-moving streams.

Eye gnats have been known to bother cattle. These small black flies cluster along the edges and in the corners of the eyes causing irritation. The flies breed in moist soil in low wet areas, and along the edges of streams and ponds. They are usually more numerous in the late spring than in summer.

There are several species of ticks which attack cattle, but only rarely do tick problems become acute in Illinois. Ticks are more numerous in undeveloped bushy pastures and in wooded areas. Ticks have piercing mouth parts and suck blood from the cattle.

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